

# Research on the Innovation in the Model of Cultivating Sci-Tech Translation Talents in Universities of Science and Engineering from the Perspective of Artificial Intelligence-Generated Content

Gelan Zhang\*, Wenjing Liao

School of Foreign Languages, Hunan University of Technology, Zhuzhou 412007, Hunan Province, China

\*Corresponding author: Gelan Zhang, [gelanwin2007@126.com](mailto:gelanwin2007@126.com)

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**Abstract:** New technologies represented by ChatGPT have transformed traditional translation work modes and brought unprecedented changes to translation teaching. Based on the development of artificial intelligence-generated content (AIGC) technology, this article analyzes the challenges it brings to sci-tech translation research in the new era, reshapes the value goals of the “ideological and political guidance + technological empowerment” model of cultivating sci-tech translation talents, proposes tentative approaches about the innovation in the model of sci-tech translation talents in universities of science and engineering, and strengthens the talents’ translation competence, language proficiency, and interdisciplinary ability, aiming to provide new perspectives and thoughts for the development of translation research in the AIGC era.

**Keywords:** Artificial intelligence-generated content; Sci-tech translation; Talent cultivation; Interdisciplinary

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## 1. Introduction

With the rapid development of artificial intelligence, the language service industry has seen significant changes. Communication has been faster and more convenient while translation teaching has been faced with new challenges due to the emergence of various machine translation tools. In today’s rapidly developing artificial intelligence-generated content (AIGC) technology, cross-integrating the cultivation of sci-tech translation talents with multi-type fields like translation technology and artificial intelligence and exploring the bidirectional forces between humanities and technical sciences in sci-tech translation are the key to determining whether new-era sci-tech translation teaching can harness AIGC technology. With regard

to promoting the comprehensive innovation in the model of developing sci-tech talents in “ideological and political guidance + technological empowerment”-oriented colleges and universities, it is of great significance to help students as translators fully recognize the advantages and limitations of translation technology, skillfully integrate into the technology-driven industrial model of sci-tech translation, tap students’ translation potential and enhance their (i.e. translators’) initiative, and dialectically view the relationship between machine translation and human translation, and improve post-editing ability.

The research on developing translation talents is a systematic, diverse, and complex overall project. Currently, numerous explorations have been conducted in academia, which can be broadly divided into macro and micro levels. The macro-level research covers translation on the disciplinary attributes <sup>[1]</sup>, the teaching philosophy <sup>[2]</sup>, teaching management, etc. The micro-level practice focuses on the discussion of the model of cultivating translation talents in specific fields, such as training models of business translation talents <sup>[3]</sup>, cultivating modes of legal translation talents <sup>[4]</sup>, and project-driven developing models of cultivating translation talents <sup>[5]</sup>. Through the above review, it is evident that there is limited literature on the cultivating mode of sci-tech translation talents. Based on the AIGC perspective, this article attempts to analyze the challenges it brings to the cultivation of sci-tech translation talents and construct the “ideological and political guidance + technological empowerment” model for cultivating scientific translation talents, in hopes of providing some inspiration for the effective combination of science and technology with translation teaching.

## **2. Challenges brought by AIGC perspective to the cultivation of sci-tech translation talents in universities of science and engineering**

In the wave of technological, intelligent, and modern development, current universities face many challenges in the cultivation of sci-tech translation talents. According to a survey report on translation projects implemented in 2023, machine translation technologies were adopted by 52.9% of the projects. Among the technologies, the dominance of “machine translation + post-editing” reflects the pursuit of efficiency and quality in the translation industry. At the same time, up to 81.5% of the translation companies stated that they had already or intended to deploy large technologies, indicating that large model technology will become a key force in leading industry transformation. Specifically, most science and engineering universities face AIGC-driven educational changes in the process of cultivating sci-tech translation talents.

### **2.1. Updating the ideas of sci-tech translation talents cultivation goals**

Currently, the traditional mode of sci-tech translation teaching has influenced the forms of the subject and object of scientific translation talent cultivation. The more advanced artificial intelligence technology is, the more important the connotation and significance of humanities courses are. In fact, what AIGC-type intelligent technology can replace is only modalized knowledge, derivative wisdom, and repeatable labor, rather than true perception and creativity <sup>[6]</sup>. The cultivation of sci-tech translation talents should implement the ideas of “two-way integration of technology and humanities,” with the purpose of achieving talent supply and demand matching, and the overall orientation of promoting sustainable economic and social development, so as to reconstruct the value goals of the “ideological and political guidance + technological empowerment” intelligent cultivation model for translation. Only by drawing strength from the era of intelligent technology and digital economy can we find the position of sci-tech translation talent cultivation in the collision with AIGC.

## **2.2. Promoting the optimization of sci-tech translation talent cultivation**

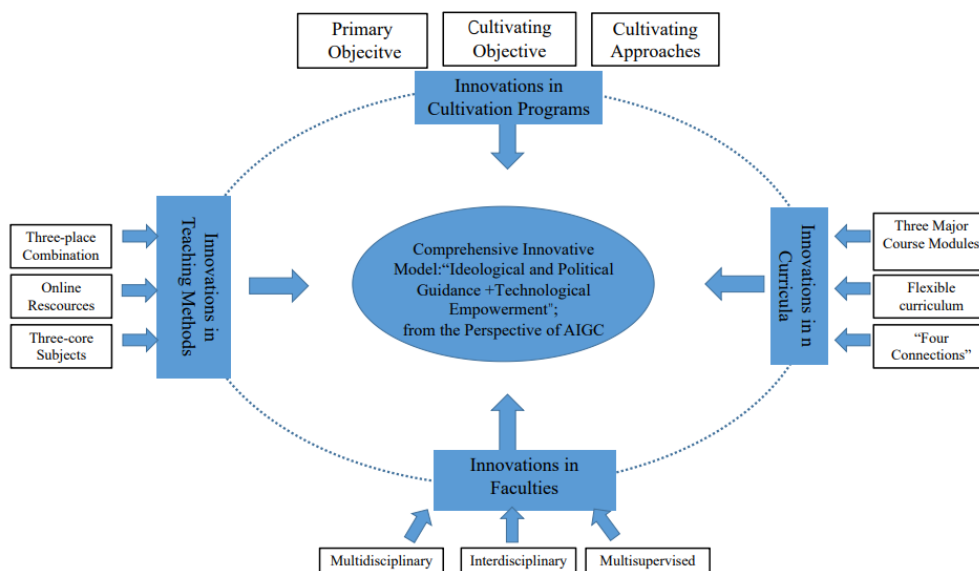
In the current rapid development of AIGC technology, cultivated sci-tech translation talents should take advantage of the process of promoting the dissemination of Chinese sci-tech translation knowledge and culture. When selecting scientific translation texts, teachers should keep up with the cutting-edge of the times, adhere to scientific, professional, accurate, and logical principles, and strengthen the development of the talent cultivation model of the integration between industries and education. Specifically, the model requires students to “combine course learning with work experience, and integrate theory with practice in real work if possible, so as to deepen their understanding of professional knowledge and improve work-related abilities”<sup>[7]</sup>. This requires universities of science and engineering to leverage their own advantages, actively cooperate with local government agencies, enterprises, institutions, and translation companies to establish translation practice bases, form a collaborative chain of government, industry, academia, and research, and improve students’ professionalism and practical skills as sci-tech translators. By integrating school-enterprise resources, students are guided to obtain market information on the development of the sci-tech translation industry, so as to enhance their competitiveness and the quality of translation teaching.

## **2.3. Highlighting the information literacy of sci-tech translation talent cultivation**

With the continuous update and development of translation techniques such as ChatGPT and Trados, the era of “human-machine collaboration” has arrived, which has profoundly impacted the cultivation of sci-tech translation talents. In the age of AIGC times, sci-tech translation does not mean simply processing the original scientific texts, but improving efficiency and ensuring effectiveness with the help of artificial intelligence and other information technologies. However, most universities of science and engineering suffer from deficiencies in sci-tech translation software, faculty strength, and translation training rooms, so the cultivation of sci-tech translation talents still lacks systematicity and comprehensiveness. In the era of digitalization of education, large language models represented by ChatGPT require higher information technology literacy from translation talents, who need to be proficient in computational linguistics, computer science, machine translation, and other domain knowledge to ensure the accuracy, professionalism, faithfulness, and fluency of translations<sup>[8]</sup>. Therefore, the cultivation of sci-tech translation talents in science and engineering universities needs to focus on improving students’ skills in language and translation, offering professional courses with scientific or technical features, such as mathematics, statistics, computational linguistics, and machine translation, strengthening the overall language intelligence literacy of foreign language teachers and students major in foreign languages, and meeting the needs of the translation industry and national development.

## **3. Tentative approaches for the innovative model of cultivating sci-tech translation talents in science and engineering universities**

Sci-tech translation is closely related to foreign language ability, and “the country’s overall foreign language proficiency has become the pillars of a great power and key engine for China’s participation in global affairs”<sup>[9]</sup>. To ensure that the research is systematic, normative, and integral, and to cultivate sci-tech translation talents who can tell China’s scientific stories and spread Chinese culture, this article constructs an innovative model for cultivating sci-tech translation talents based on the characteristics of science and engineering universities (**Figure 1**), which includes five parts.



**Figure 1.** Tentative approaches for the innovative cultivation model of scientific translation talents in science and engineering universities from the perspective of AIGC

### 3.1. Innovative research on cultivation objectives

Grounded in the current market demand characteristics of language intelligence translation talents and the strategic goals of national talent cultivation, with the aim of positively answering the fundamental tasks of education—“for whom to cultivate people,” “how to cultivate people,” and “what kind of people to cultivate”—achieving talents supply and demand matching, with the overall guidance of promoting the sustainable development of the economy and society, universities should reconstruct the value goals of the “ideological and political guidance + technological empowerment” intelligent model of cultivating sci-tech translation talents. Based on the core idea of promoting translation talents to keep up with the information age, and seamlessly connecting “production and marketing,” the objectives cover a comprehensive innovative model that includes students’ language ability, translation ability, humanistic and political literacy, interdisciplinary literacy, and language intelligence technology literacy (i.e., two core abilities and three core literacies). Science and engineering universities need to maximize the strengths of engineering institutions, focus on cultivating scientific translation talents who are familiar with the sci-tech culture, possess solid translation skills, and support the transformation and dissemination of China’s advanced sci-tech achievements in accordance with regional characteristics and geographical advantages.

### 3.2. Innovative research on cultivation programs

Taking the fundamental task of moral education, this article proposes a cultivation program that emphasizes both language translation ability and humanistic and political literacy. The objectives are to cultivate high-level sci-tech translation talents with language translation ability, professional skills related to language intelligence, and humanistic ideological and political literacy, and to cultivate students’ Chinese sentiments and international vision. In terms of cultivation methods, universities of science and engineering should actively cooperate with their characteristic disciplines, balance classroom teaching and practical teaching, and achieve integration of government, industry, education, and research. As for training content, they should offer knowledge and courses related to machine translation and corpus construction, increase ideological and political content such as “the development of artificial intelligence” and “Chinese culture going global,” and



seek breakthroughs to maximize the time efficiency of translation talent cultivation.

### **3.3. Innovative research on curricula**

Taking basic courses, professional courses, and practical courses as the three major course modules, and referring to the “flexible” translation curriculum reform methods of top foreign universities, universities should re-examine existing courses, ensure the multi-configuration of ideological and political education courses, basic literacy courses, language intelligence courses, and interdisciplinary courses, and construct an innovative course setting module under the AIGC background. According to the requirements of the current language intelligence era for language technology and scientific knowledge, they should establish a new mechanism for the integration involving additions and cancellations, develop localized courses to meet local market demands, and propose a course model that develops talents with value guidance, diverse skills, and social orientation.

Specifically, the curricula for cultivating sci-tech translation talents need to achieve “four connections,” namely “connecting theory, profession, practice, and language.” First, theory originates from practice, experience, and thought, and its purpose is to understand the essence of translation, explain the disciplinary structure, revise translation experience, and guide translation practice <sup>[10]</sup>. In sci-tech translation teaching, teachers can teach some classic translation theories, strategies, techniques, and methods from the East and West to guide students in conducting sci-tech translation practice. The corresponding courses include Introduction to Translation Studies, Reading and Translating Scientific Literature, and so on. Secondly, connecting professions requires sci-tech translation talents to be familiar with sci-tech knowledge, master a series of scientific terms, and make translation both professional and readable. From the perspective of AIGC, for Chinese sci-tech and cultural knowledge to go global, there need to be translation talents who are proficient in scientific and cultural knowledge and bilingual culture, which requires science and engineering universities to offer relevant courses such as “Scientific Culture Going Global” to cultivate sci-tech translation talents.

Furthermore, connecting practice means that sci-tech translation talents need to improve their translation abilities through participating in translation practice, such as practical training in enterprises and other real translation projects, etc., to achieve the integration of theory and practice. Therefore, science and engineering universities need to take the market as the orientation, the resources as the backing, actively cooperate with local government agencies, enterprises, institutions, and translation companies to build translation practice bases, and construct a cooperative mode of government, industry, education, and research. Finally, connecting language emphasizes that sci-tech translation talents need to be equipped with solid language skills, profound cultural deposits, good critical thinking ability, and post-editing ability. To ensure the integrity and system of students’ knowledge, science and engineering universities need to add foreign language courses such as “Basics of Translation,” “Chinese Sci-Tech Culture,” “Critical Thinking,” and “Post-Editing” in curricula.

### **3.4. Innovative research on teaching methods**

By means of skillfully integrating translation with ideological and political education, deep integration with intelligent technology, and organic integration with local characteristics, a three-place combination of conventional translation classrooms, artificial intelligence language laboratories, and translation practice bases is to be realized. For example, teachers can choose materials rich in ideological and political elements

for sci-tech translation, with content covering sci-tech translation dissemination, opportunities and challenges of scientific translation in the AI era, the localization process of sci-tech translation, and language services, to integrate translation teaching. By fully utilizing the Internet and online resources platforms such as Chaoxing and MOOCs, universities of science and engineering can invite professionals from the language service and language intelligence industry to step into the translation classroom and design classroom teaching around students, teachers, and industry professionals as the three core subjects.

The cultivation of sci-tech translation talents in science and engineering universities should guide students to carry out translation practice activities that are in alignment with classroom learning, such as operating scientific translation workshops, translation practice projects, and writing practice reports. Additionally, teachers are expected to integrate online and offline resources, publish scientific translation exercises online, and guide students to use smart teaching platforms to complete sci-tech translation tasks and improve their deficiencies. For offline activities, teachers assign project-based sci-tech translation exercises and ask students to complete practice assignments within a set duration. Through the innovation of the blended teaching model, the cultivation of scientific translation talents has revolutionized traditional teaching, optimized the teaching process, and adapted to the trend of digital empowerment in talent cultivation.

### **3.5. Innovative research on faculties**

Guided by compound foreign language professionals with knowledge and skills in language intelligence and information science, these universities should encourage existing translation teachers to master relevant knowledge in language intelligence and other disciplines through further education. By leveraging regional advantages, they should form interdisciplinary translation teaching teams, promote collaborative consensus among teachers with interdisciplinary professional backgrounds, foster high-quality professional discipline teachers, so as to complement each other between disciplines and build a cultivation model with compound tutors. For science and engineering universities, computer technology or language intelligence majors can provide theoretical guidance for the cross-knowledge database, forming a compound cultivation model in the process of cultivating translation talents and enhancing interaction between translation majors and other disciplines.

Sci-tech translation teachers need to keep pace with the times, understand the latest translation technologies, master relevant theoretical knowledge, and accumulate rich practical experience in scientific translation. Translation teachers in science and engineering universities should improve themselves, exchange frequently with teachers from similar universities, flexibly apply various translation technologies, improve relevant sci-tech knowledge backgrounds, and guide students in conducting sci-tech translation practice with broad experience. In translation teaching practice, teachers also need to combine the characteristics of sci-tech English to provide professional translation guidance for students and cultivate sci-tech translation talents who are fluent in Chinese and foreign cultures, can integrate various disciplines of knowledge, and master intelligent technologies.

## **4. Conclusion**

With society developing rapidly, science and technology are updating and iterating. Translation technologies are also constantly upgrading. The innovation of science and technology and national

strategies call for “the cultivation of translation talents to respond, to hold onto the essence of language and expand new fields” [1]. This article focused on the cultivation model of sci-tech translation talents, reshaping the value goals of the “ideological and political guidance + technological empowerment” intelligent transformation model of translation, constructing sub-models of the innovative cultivation of translation talents in universities of science and engineering including cultivation programs, curricula, teaching methods, and faculties, and integrating the comprehensive innovative cultivation model from the perspective of AIGC.

Ideological and political guidance sets the direction, and technological empowerment is the means. In the process of cultivating sci-tech translation talents in universities of science and engineering, it is necessary to maintain a “political awareness,” ensuring that translation teaching content and methods conform to the values of the new era and the Party’s principles and policies. At the same time, universities should actively adopt a series of intelligent technologies and equipment such as computer-assisted translation tools and online collaboration platforms, and promote the empowerment of sci-tech translation technology, improve students’ translation efficiency and quality, and informatization capabilities, to cultivate high-quality sci-tech translation talents. Only by standing at the intersection of the era’s propositions and national consciousness, updating the objectives of cultivating sci-tech translation talents, promoting its optimization and upgrading, strengthening its information literacy, and actively seeking innovation and change to adapt to the integrated development of the global language compound industries, can we cultivate high-quality and compound sci-tech translation talents in the new era.

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## Disclosure statement

The authors declare no conflict of interest.

## References

- [1] Fu J, 2023, China’s Translation Education in the New Era of Translation Studies as an Independent Discipline. *Technology Enhanced Foreign Languages*, 2023(1): 11–13.
- [2] Hu A, 2021, Translation Teaching Management and Talents Cultivation: New Trends, Landscapes, and Approaches. *Chinese Translators Journal*, 2021(1): 68–74, 191.
- [3] Huang X, Lu X, Lai A, 2021, Collaborative Education and Talent Development in Business Translation. *Shanghai Translation*, 2021(1): 45–49.
- [4] Huang C, Zhang F, 2019, A Probe into the Cultivating Mode of Legal Translation Talents: From the Perspective of “Holistic Education.” *Foreign Language and Literature*, 2019(6): 11–15.
- [5] Cao H, He Y, 2017, Project-Driven Training Mode for Patent Translators in the Era of “Internet Plus.” *Shanghai Journal of Translators*, 2017(1): 46–51, 95.

- [6] Yuan X, 2023, Research on Talents Training Mechanisms in Art and Design from the Perspective of AIGC. *China Gems & Jades*, 2023(06): 44–48.
- [7] Hu T, 2019, Industry-Oriented: Experience and Enlightenment of Graduate Education Reform at King Mongkut's University of Technology Thonburi in Thailand—Taking the ChEPS Project as an Example. *Foreign Educational Research*, 2019(6): 74–88.
- [8] Cheng J, Du L, Xu Y, 2024, Construction and Implementation of Talent Training Mode in Agricultural Science and Technology Translation in Higher Education in the New Era of Agricultural Sciences. *Shanghai Journal of Translators*, (05): 43–48.
- [9] Jiang H, Yang Z, 2024, Reflections on the Cultivation of Compound Type Foreign Language Talents in the New Era. *Foreign Languages in China*, 2024(1): 2–5.
- [10] Mu L, 2017, Translation-Related Doctoral Programs as A Major Contributor to Theoretical Development in Translation Studies. *Chinese Translators Journal*, 2017(3): 25–30, 128.
- [11] Zhang Y, Bai H, 2024, How to Cultivate Interdisciplinary Translation Talents in Industry-Oriented Universities in the New Era of Humanities: A Practical Exploration Based on the Master's Program in Translation at Civil Aviation University of China. *Shanghai Journal of Translators*, 2024(3): 54–58.

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